DOCUMENT RESUME

ED 065 789 CG 007 109

AUTHOR Hamilton, Jack A.; And Others
TITLE Measuring the Outcomes of an Individualized Career Guidance System.
INSTITUTION American Institutes for Research in the Behavioral Sciences, Palo Alto, Calif.
PUB DATE Apr 72
NOTE 12p.; Paper presented at the American Educational Research Association in Chicago, Illinois on April 3-7, 1972

EDRS PRICE MF-$0.65 HC-$3.29
DESCRIPTORS *Career Planning; Counseling; Counseling Goals; Educational Guidance; *Guidance; Guidance Counseling; Guidance Programs; Guidance Services; *Individual Counseling; *Individualized Programs; Measurement; *Occupational Guidance; Pupil Personnel Services

ABSTRACT

During the past five years, staff of the American Institute for Research (AIR) in Palo Alto, California have been developing, field testing, and revising a guidance system especially suited to systems of individualized education. A primary aim of AIR's Comprehensive Career Guidance System (CCGS) is to help each student plan wisely for the future. This paper has attempted to provide a rationale for, as well as examples of initial results from, the application of criterion-referenced measurement within an individualized career guidance system. Goals in the area of 'life' education have been identified and important indicator skills isolated. Educational experiences have been constructed which relate to these goals. Assessment of desired outcomes is attempted in terms of skill demonstration on items which relate directly to the goals of instruction. Results are used both to assist individual students in mastering desired skills and to improve the guidance system itself. (Author/BW)

ED 065789

CG 007 109

CG
D-DPD

MEASURING THE OUTCOMES OF AN INDIVIDUALIZED CAREER GUIDANCE SYSTEM

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY

Jack A. Hamilton

Steven M. Jung

Carolyn B. Helliwell

American Institutes for Research

CG 007 109

A Paper Presented at the Annual Meeting of the American Educational Research Association, Chicago, Illinois, April 1972.

The overall aim of a school system should be to assist youth in selecting and achieving goals of personal significance. Students must be helped to recognize those skills that are significant and to schedule opportunities that will enable them not only to learn these in school situations but also to practice what they have learned in various relevant situations outside the school (Tyler, 1971). Within a total school system, no single operation should be more critical than the guidance function of assisting individual students with their career planning. The guidance portion of the school system should be predicated on the assumption that individual students need help both in setting their personal career goals (short- and long-term), and in identifying instructional objectives in the different curriculum areas in order for them to attain their goals (Hamilton, 1971).

In this context, the word "career" should not be limited only to the educational and occupational choices of youth. Rather, it should be interpreted in a broader sense to include individualized planning for goals related to all areas of an individual's life (Katz, 1969). A comprehensive guidance system must be able to provide individual planning assistance to students to help them set career goals in such areas as their: (1) occupational future; (2) educational future; (3) personal and social development; (4) development of learning skills; (5) development of community responsibility; and (6) leisure-time activities.

During the past five years, staff of the American Institutes for Research in Palo Alto, California, have been developing, field testing, and revising a guidance system especially suited to systems of individualized education (Jones, et al, 1971). A primary aim of AIR's Comprehensive Career Guidance System (CCGS) is to help each student plan wisely for the future. A student is encouraged to realistically consider his chances of achieving a wide variety of potential goals, to select those goals which he is likely to reach and which

are likely to afford him satisfying consequences, and to pursue his chosen goals with sufficient flexibility to take advantage of new opportunities and changing circumstances.

The CCGS is being developed through the following activities: (1) identification of youth development needs and the related behavioral objectives which state desired youth outcomes; (2) classification of objectives by commonalities and priorities which serve as guidelines for the design of guidance programs; (3) specification of alternative strategies which could be employed in potential guidance programs; (4) selection of strategies which seem most appropriate for certain groups of objectives and for groups of students with similar characteristics; (5) design, scheduling, and implementation of selected strategies by organizing instructional-counseling materials and procedures into individualized student learning units; (6) evaluation of the effectiveness of such units in helping students to achieve behavioral outcomes derived from the instructional objectives; and (7) revision of non-functioning elements based on evaluation results.

The sixth activity noted above, evaluation, requires the development of tests and performance standards for measuring whether each student's own needs are being satisfied, i.e., measuring the extent to which students are achieving both their short-term and long-range goals. This activity provides the feedback which is used to modify and correct the system's instructional-counseling elements.

A major difficulty in evaluating the outcome of an individualized guidance system has been the unavailability of adequate criteria for "success" in individual planning, decision making, and self-management. Martin Katz (1969) has expressed the criteria that are particularly relevant to the outcomes of an individualized guidance system:

> Without directing the content of an individual's choice, we do think we can help him in the process of choosing. This emphasis on process does not pretend to insure the "right" choice. Our

> conviction is that in education enlightened processes are intrinsically important. Therefore, we bend our efforts to increase the student's understanding of the factors involved in choice (imperfect though our own understanding may be) so that he can take responsibility for his own decision making, examine himself and explore his options in a systematic and comprehensive way, take purposeful action in testing hypotheses about himself in various situations, and exercise flexibility in devising alternate plans. (p. 17)

The attainment of such skills is difficult to measure directly.[1] In lieu of direct measurement, a set of tasks has been designed as behavioral indicators of a particular process. Student performance on these tasks can then be assessed to determine when instructional materials and procedures have succeeded in helping students acquire desired skills, when these materials and procedures have failed, and when they need further development to increase their effectiveness (Bandura, 1969).

"Norm-referenced" measurement, the traditional strategy for assessing individual differences, is ill-suited to the evaluation requirements of an individualized guidance system because it provides a basis for comparing the performance of two or more individuals with each other (Carver, 1970). Rather, evaluation instruments and procedures are needed which are capable of assessing each student's knowledge and attitudes relative to meaningful standards of individual achievement. "Criterion-referenced" measurement techniques are particularly appropriate for evaluating the effects of a guidance system designed to aid individual goal formulation and planning, since they are concerned primarily with measuring the degree of accomplishment of specified objectives (Nitko, 1970).

Traditional methods of constructing tests, stressing median item difficulty and high correlation between each item and total test score, are inappropriate in the development of evaluation instruments for such "criterion-referenced"

---

[1] See Appendix A for a chart of the model of effective personal problem solving which was used as a guide in the specification of key student process skills for components of the CCGS.

interpretation because those methods are intended to amplify test score variability rather than decrease it. A "good" item in a CCGS test is one which will be answered correctly by 100% of those students who have mastered the objective upon which it is based and will be missed by 100% of those students who have not mastered the objective. Thus, such a test should not be faulted if, when administered after instruction, everyone obtains a perfect score (Popham and Husek, 1969). The process of developing test items based on a statement of objectives is considerably simplified by using the method of comprehensive rationales (Flanagan, 1951). A comprehensive rationale consists of three parts. The first part is an illustration of the specific skill or activity, frequently using critical incidents describing especially effective or ineffective performance. The second part of the rationale includes an analysis of the behavior described in part one. This analysis is particularly useful in demonstrating the importance of the behavior, permitting the avoidance of trivial items. The last part of the rationale proposes one or more specific test items which are felt to best represent effective performance on the defined activity. This also helps to insure that the behavior to be called for in the proposed item is within the immediate repertoire of the intended examinees.

To define the activity necessitates a study of the requirements for success in that activity. A complete definition of what is meant by success is practically identical with a statement of the procedure for obtaining criterion scores (Flanagan, 1962). A major assumption has thus been made that students must be able to demonstrate certain skills in personal problem solving related to goal selection and management rather than to reach conclusions about what goals and plans are best for them as judged by independent "experts."

The following tables present data which were collected from a sample of ninth and tenth grade students during a field test of CCGS components conducted in the San Jose Unified School District, San Jose, California. Evaluation

instruments in which criterion items were tightly and strictly related to the outcomes of instruction with as high a degree of face validity as was possible were employed to assess student attainment of desired component outcomes. The particular outcomes focused on student acquisition of meaningful information and decision-processing skills in order to plan their educational and occupational futures more wisely.

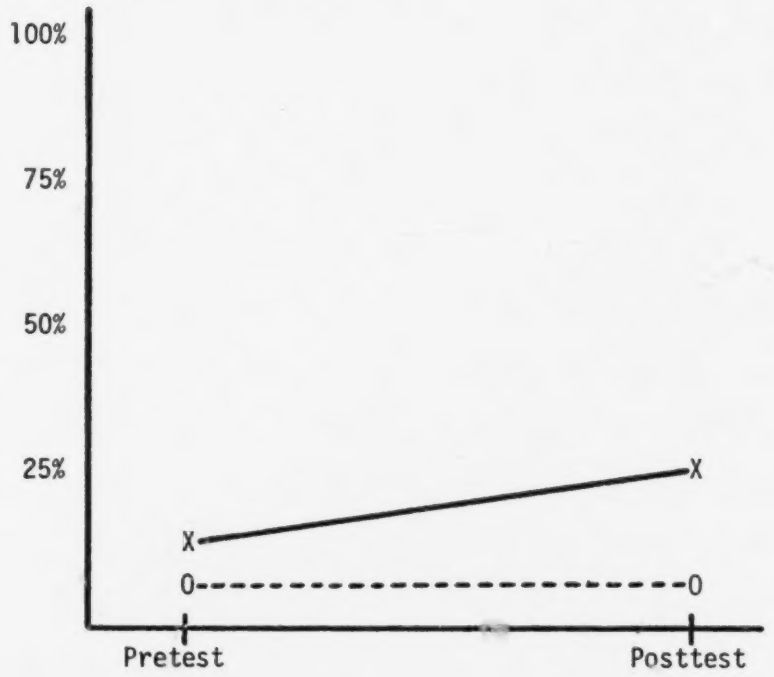
Table 1 presents a summary of the responses of 30 students to 20 items related to the objective "to classify examples of the following factors you should consider when you think about your future educational and vocational goals: (a) abilities, (b) interests, (c) values, (d) physical traits, and (e) personal and social behavior." These items were written according to the techniques mentioned earlier and reflect the intended gain in "mastery" of a career guidance skill as a result of exposure to the CCGS program. The 80% accuracy level, which was chosen arbitrarily, was felt to represent an acceptable level of performance on this particular objective. It will be seen that the gain of 10% resulted in a posttest performance level of 25% mastery, far from the desired 100% level but realistic considering the brief exposure period.

Table 2 presents the results of pre and posttests on another CCGS objective. Again, this table shows rather substantial gains (40%) in "mastery level" of students exposed to the CCGS instructional experiences for 20 days; these gains are put in some additional perspective by the results shown for no-treatment students. Items in these tests should be examined to isolate those which seem to be answered correctly by both the pre-exposure treatment group and the no-treatment groups on pre and posttests. These items require revision to be more "discriminating" to the effects of instruction.

TABLE 1

PERCENT OF STUDENTS WHO ANSWERED 80% OF THE ITEMS RELATED TO THE FOLLOWING OBJECTIVE CORRECTLY

To classify examples of the following factors you should consider when you think about your future educational and vocational goals: (a) abilities, (b) interests, (c) values, (d) physical traits, and (e) personal and social behavior.



X——————X CCGS Program Ss (N=20)

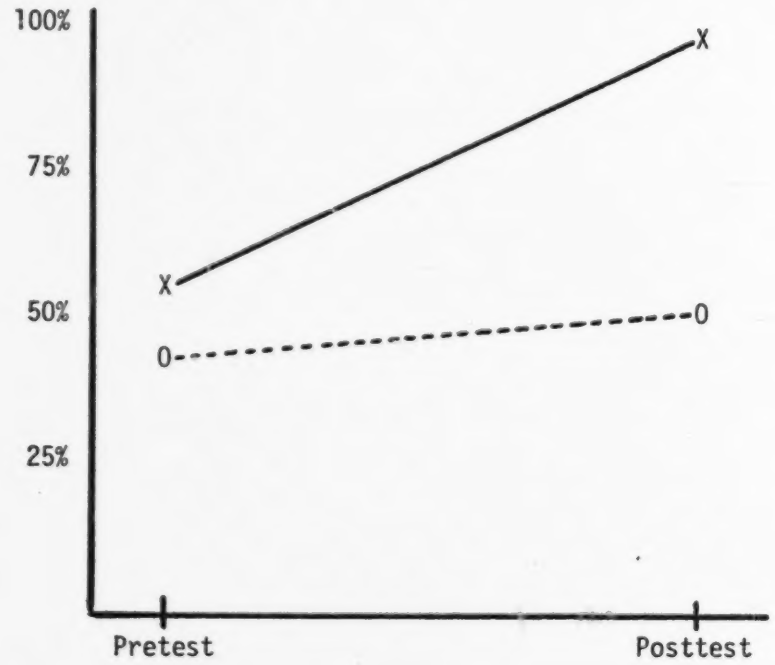
0----------0 No Treatment Ss (N=10)

TABLE 2

PERCENT OF STUDENTS WHO ANSWERED 80% OF THE ITEMS

RELATED TO THE FOLLOWING OBJECTIVE CORRECTLY

To identify examples of the factors stated in the previous objective (abilities, interests, values, personal and social behavior, physical traits) after studying a description of a hypothetical student.



X ——————— X CCGS Program Ss (N=20)

0 ---------- 0 No Treatment Ss (N=10)

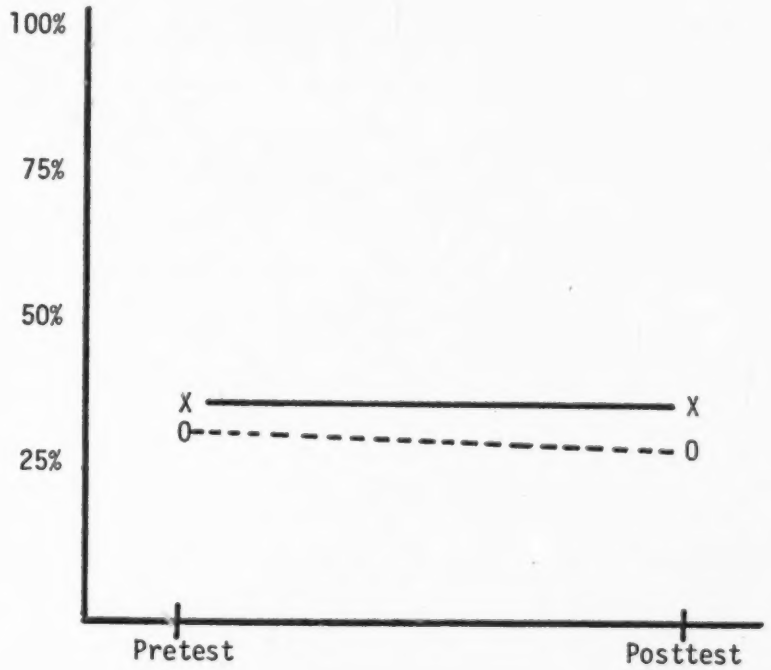
Table 3 presents the results on an objective where the CCGS treatment was clearly ineffective in bringing about any gain in the performance of participating students. Such data as these are useful in providing feedback for revision of the instructional-counseling process. Either educational materials are not functioning in the intended manner or students did not receive sufficient exposure to these materials. Judgments about such matters of process are best made on the basis of other data. In this particular case, classroom observation and interviews with teachers suggested that few if any students had actually been adequately exposed to the materials for the objective in Table 3, due to unclear instructions.

In summary, the present paper has attempted to provide a rationale for, as well as examples of initial results from, the application of criterion-referenced measurement within an individualized career guidance system. Goals in the area of "life" education have been identified and important indicator skills isolated. Educational experiences have been constructed which relate to these goals. Assessment of desired outcomes is attempted in terms of skill demonstration on items which relate directly to the goals of instruction. Results are used both to assist individual students in mastering desired skills and to improve the guidance system itself.

TABLE 3

PERCENT OF STUDENTS WHO ANSWERED 100% OF THE ITEMS RELATED TO THE FOLLOWING OBJECTIVE CORRECTLY

To define the term "developed ability" and to describe three examples of scales on the Developed Abilities Performance Test.



X ——— X CCGS Program (Pretest N=23) (Posttest N=20)

0 - - - - - - - - - - - - - - - 0 No Treatment (Pretest N=54) (Posttest N=58)

REFERENCES

Bandura, A. Principles of behavior modification. New York: Holt, Rinehart & Winston, Inc., 1969.

Carver, R. P. Special problems in measuring change with psychometric devices. In Evaluative Research. Pittsburgh, Pa.: American Institutes for Research, 1970, 48-61.

Flanagan, J. C. The use of comprehensive rationales in test development. Educational and Psychological Measurement, 1951, 11, 151-155.

Flanagan, J. C. Measuring human performance. Pittsburgh: American Institutes for Research, 1962.

Hamilton, J. A. Immediate and longitudinal research results. Paper presented at the annual meeting of the American Educational Research Association, New York City, February, 1971.

Jones, G. B., Nelson, D. E., Ganschow, L. H., & Hamilton, J. A. Development and evaluation of a comprehensive career guidance system. Final Report. Project 7-0109. Basic Studies Branch, Division of Comprehensive and Vocational Education Research, United States Office of Education, January, 1971.

Katz, M. R. Can computers make guidance decisions for students? College Board Review, 1969, 72, 13-17.

Nitko, A. Criterion-referenced testing in the context of instruction. Paper presented at the annual meeting of the American Educational Research Association, Minneapolis, Minnesota, March, 1970.

Popham, W. J. & Husek, T. R. Implications of criterion-referenced measurement. Journal of Educational Measurement, 1969, 6, 1-9.

Tyler, R. W. The concept of functional education. In S. M. McMurrin (Ed.), Functional education for disadvantaged youth. New York: Committee for Economic Development (Supplementary Paper No. 32), 1971, 3-23.

APPENDIX A

Personal Problem-Solving Model for the
Comprehensive Career Guidance System

Skill Area #1: Understanding the Problem

Being willing to work toward setting and achieving goals in the various career areas (educational, occupational, personal-social, academic-learning, citizenship, leisure-time).

Skill Area #2: Searching For and Using Information

a. Personal information on abilities, interests, preferences, etc., and

b. Information about related opportunities in the various career areas.

Skill Area #3: Locating Alternatives

Thinking of several possible goals.

Skill Area #4: Selecting Goals and Making Plans

a. Choosing the goals (first and second choice) that seem like the best bet for the individual, and

b. Making plans for reaching them.

Skill Area #5: Carrying Out Plans

Carrying out the plans, switching to the second best goal if necessary.

Skill Area #6: Finding Out If It works

a. Judging whether the first (or the second best) goal has been achieved, and

b. Describing what helped and what hindered the individual's efforts along the way.